

Date: Sun, 26 Sep 93 04:30:08 PDT
From: Ham-Ant Mailing List and Newsgroup <ham-ant@ucsd.edu>
Errors-To: Ham-Ant-Errors@UCSD.Edu
Reply-To: Ham-Ant@UCSD.Edu
Precedence: Bulk
Subject: Ham-Ant Digest V93 #59
To: Ham-Ant

Ham-Ant Digest Sun, 26 Sep 93 Volume 93 : Issue 59

Today's Topics:

 Alumina tower specs
 Antenna for Satellite Reception.
 Budget "Broomstick" Beam (~\$5)
 Coils in Cellular Antennas
 Converting 10m=>2m antenna's (y'all are making this way to hard)
 Kill the Rubber Duck!
 Losses in VHF/UHF connectors (summary) (2 msgs)

Send Replies or notes for publication to: <Ham-Ant@UCSD.Edu>

Send subscription requests to: <Ham-Ant-REQUEST@UCSD.Edu>

Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Ant Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-ant".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 24 Sep 1993 13:12:24 -0700
From: elroy.jpl.nasa.gov!swrinde!cs.utexas.edu!asuvax!chnews!ornews.intel.com!
ornews.intel.com!not-for-mail@ames.arpa
Subject: Alumina tower specs
To: ham-ant@ucsd.edu

I have purchased a used tower from a ham. He says that it
is an Alumina (?) brand tower. It is a 2 section crankup
with a total height of about 60-65 feet. The problem is,
he didn't have any specs on it and the county woun't let
me put it up unless I get a permit and I can't get the
permit without specs. Does anyone know of this company,
have the tower, or even have the specs on it? Please respond
by e-mail to dgellis@orglobe.intel.com

Thank you David K0BU

Date: 24 Sep 93 20:31:41 PST
From: csus.edu!netcom.com!netcomsv!terapin!nlewis@decwrl.dec.com
Subject: Antenna for Satellite Reception.
To: ham-ant@ucsd.edu

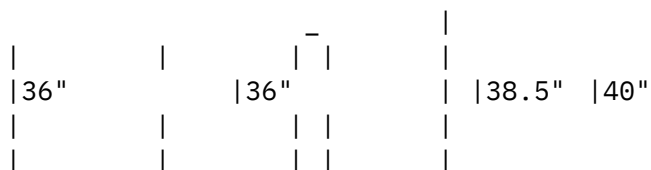
If you are interested in receiving weather satellite images, try the "zapper" in the Weather Satellite Handbook from ARRL. It is designed for 137Mhz and uses a crossed dipole design with a crossed reflector in order to do well with both linear and circular polarization... Works great and is very easy to build.

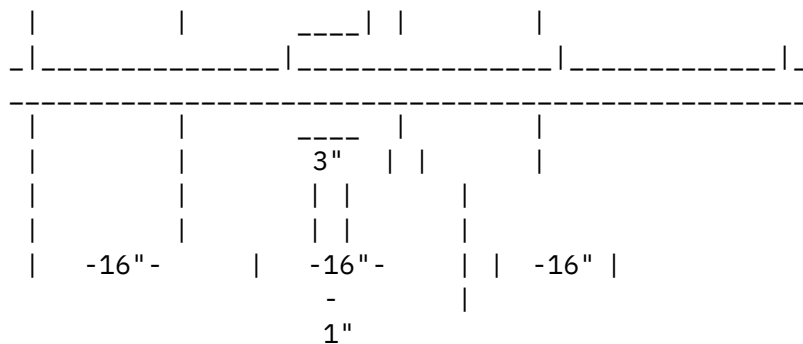
Date: 25 Sep 93 08:10:01 GMT
From: swrinde!cs.utexas.edu!uwm.edu!spool.mu.edu!nigel.msen.com!caen!destroyer!vela.acs.oakland.edu!vela.acs.oakland.edu!swood@network.ucsd.edu
Subject: Budget "Broomstick" Beam (~\$5)
To: ham-ant@ucsd.edu

I received quite a few requests for a post of how I built my budget beam. Seeing as how it is made in part out of a broomstick, I call it my "Budget 'broomstick' beam. I also call it that, as it was peiced together from a variety of information I obtained and assembled just a couple of days before Halloween about three years back.

I was spending my spare time at school parousing a copy of the Radio Handbook by W. Orr looking at design specifications for yagi 4-element antennas for 2 meters. He had a couple of nice designs in there for standard antennas using a gamma match and/or a t-match. Seeing, however, that this design would require very specifics as to element diameter as well as capitor matching I was somewhat unsatisfied. Before I left I did happen to run accrossed a design for a folded dipole however that could be fed with balanced line and also a suggestion on another page for making a coaxial balun.

Checking the electrical wavelengths for 2 meters, I came up with the following design:





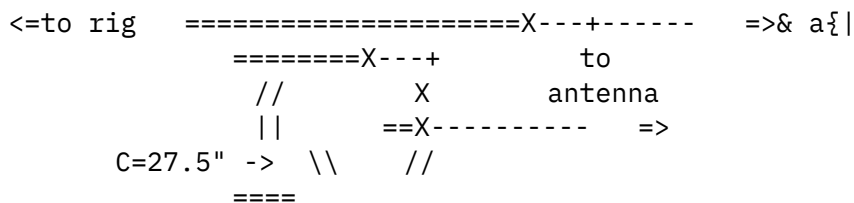
As I have stated, the beam material was made of an old peice of varnished broomstick that I had lying around. I was walking through a Radio Shack when I noticed a aluminum grounding wire that they had that was single strand at about 10 guage. The aluminum was just stiff enough to hold form. (comes in about a 12" diamater role and has more than enough to make a lot of good antennas for vhf/uhf - I forget the catalog number though)

You could also probably use a #10 or #12 copper wire at a little more cost that you can easily obtain from your hardware store.

The directors are each 36" inches long (total qty 2), the reflector (1) 40" long, and the driven is a 38.5 " long folded dipole with 1" spacing of the folded element and two three inch tuning stubs. (total of 85") Elements were spaced 16" apart and a peice of plexiglas was used on each side of the driven element to keep the folded dipole 1" spaced.

I used alligator clips to connect to the tuning stubs and was able to get at least a little tuning of swr by moving the clips up and down the stubs.

This kind of an antenna would normally be fed with balanced line, but as I say, I found a few sources for coaxial baluns, and dragged out some old coax.



The loop varies in size with the type and size of coax, and in fact I found three different suggested length for RG58. However, I went with 27.5" of loop and got reasonable results. The coaxial braid is connected toghether from the feedline and both ends of the loops. The one end of the loop's center conductor is connected with the feedlines center

conductor to make one balanced lead. the other center conductor on the loop then makes the other.

I taped my loop near the braid soldering and left the loop somewhat in a circle as shown above.

I then got a single u-bolt, and drilled some holes through the middle of the broomstick, and put the sucker up. The SWR when my brother tested it was around 2, but I have had it lower in the past. I have not run a lot of tests on it, but it does have reasonable front to side and front to back directionality. It also helped me to make a long haul from Clarkston to a Detroit repeater on low power full quieting (about 40 miles with the crow at .125 watts).

If anyone tries this bugger out, give me a report. And if anyone runs any actual tests, I would be interested to know how it fares...

swood - WQ8B

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Sept. 24 Deadline for submitting Michigan Antlerless deer applications
Sept. 26 Opening day of Goose season (Upper Peninsula of Michigan)
(canada, blue, snow, whitefront, ross and brandt w/stamp)
Sept. 29 Closing day of early Michigan Elk seasons (permit only - see guide)

Date: Sat, 25 Sep 93 17:50:30 GMT
From: btree!hale@network.ucsd.edu
Subject: Coils in Cellular Antennas
To: ham-ant@ucsd.edu

In article <1993Sep23.010539.20849@indirect.com> jlbromley@indirect.com (Jim Bromley, W5GYJ) writes:

[about gain antennas for cellular phones]

>There's nothing Cell-Tel specific about this style of antenna. They
>are also used in the 800-MHz land mobile service. But they have
>become identified with cellular in the public's mind, I suppose.

Very true. This same antenna design has been used for more than 20 years in the 450 MHz gain antennas produced by some manufacturers. You have probably seen them - they have a bulge about 1/3 of the way up the antenna which has a piece of black insulation covering it. The insulation covers a helical cut in the piece of brass. Think of the bulge as a delay line and it makes a lot of sense - the signal remaining at the top end of the lower radiating element is delayed by about 1/2 of a cycle and then is fed to the upper element.

The 800/900 MHz gain antennas don't have anything new in them; the designs have just been scaled from the 450 MHz ones. And while the designers were at it, they figured out how to reduce manufacturing cost.

Bob Hale
...!hale@brooktree.com (preferred)

...!ucsd!btree!hale

Date: Thu, 23 Sep 93 09:40:43 CDT
From: pacbell.com!sgiblab!spool.mu.edu!umn.edu!uum1!kksys.com!edgar!brainiac!
moron!pillock!stevej@network.ucsd.edu
Subject: Converting 10m=>2m antenna's (y'all are making this way to hard)
To: ham-ant@ucsd.edu

Ok, here we go. Two easy to modify antennas are made by Radio Shack. Their standard year around model is a grey mag mount with 39" (+ or -) whip (I think 21-940 is the stock number).

1. Take the loading coil apart. (If I remember correctly the coil is pressed into the plastic from the bottom. I used a plastic hammer to rap the stud on the top to push it out the bottom.)
2. There are from the bottom 2 or 3 coils then a tap then lots of coils and the top tap. Remove 2 to 3 coils from the top and re-attach to the top tap.
3. Replace the 39" whip with a 54"-57" whip.
4. Get your out of band 2m and swr/fs (field strength for those of you in Rio Linda, Ca) meter. Tune up and down the band until you find out where the antenna is tuned. It will probably be somewhere in the 150s. Start cutting the antenna until you tune it to your target frequency.
5. There you are, 5/8 wave 2m antenna.

Radio Shack also sells from time to time a cheap black mag mount which comes apart much easier. Take 2 to 4 coils off the bottom. DON'T change the whip. Cut and tune, cut and tune then magic, 2m 1/2 wave antenna.

This works equally well with other base loaded cb antenna's but I think it is cheaper and easier to buy one at a hamfest but not at all as fun.

If you want a lengthy technical discussion on the above ASK Dr. Science

(Gary Coffman) as he types faster than I do! ;-)

Steve KA0VYB

Microwavers do it with higher frequency

Date: Sat, 25 Sep 1993 14:28:41 GMT
From: swrinde!cs.utexas.edu!uwm.edu!spool.mu.edu!howland.reston.ans.net!gatech!
kd4nc!ke4zv!gary@network.ucsd.edu
Subject: Kill the Rubber Duck!
To: ham-ant@ucsd.edu

In article <27v3vl\$78f@news.delphi.com> gregl@news.delphi.com (Greg Law) writes:
>
>While on the topic of antennas and connectors, I have a couple of questions.
>Has anyone used Motorola jacks with 2m transceivers and do they work well?

Do you really mean Motorola jacks, or are you talking about RCA jacks,
aka phono plugs? If it's the latter, they work well up through at least
470 MHz, Motorola and GE use them as internal connectors in their trunk
mount radios. The only problem is mechanical. They aren't really very strong
or secure.

Gary

--
Gary Coffman KE4ZV | "If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam." | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

Date: Fri, 24 Sep 1993 11:51:28 GMT
From: dxis!k2ph@uunet.uu.net
Subject: Losses in VHF/UHF connectors (summary)
To: ham-ant@ucsd.edu

Date: Sat, 25 Sep 1993 04:11:05 GMT
From: destroyer!vela.acs.oakland.edu!w8hd!kenh@uunet.uu.net
Subject: Losses in VHF/UHF connectors (summary)

To: ham-ant@ucsd.edu

Truly EXCELLENT posting, Bob...thanks for taking the time to make those measurements.

Your message now resides on my HD for reference when needed!

Ken

--

kenh@w8hd.org

Ken Hoehn - Teletech, Inc.

Compuserve: 70007,2374

N8NYO

P.O.Box 924

FAX: (313) 562-8612

Dearborn, MI 48121

VOICE: (313) 562-6873

Date: Thu, 23 Sep 1993 20:23:00 GMT

From: usc!howland.reston.ans.net!spool.mu.edu!bloom-beacon.mit.edu!news.bu.edu!
wang!dbushong@network.ucsd.edu

To: ham-ant@ucsd.edu

References <1993Sep16.230845.1@wsub.ctstateu.edu>, <CDI59H.ELH@wang.com> ,

<CDpo6w.LpH@sunsrvr6.cci.com>ang

Subject : Re: Kill the Rubber Duck!

jdc@cci.com (James D. Cronin) writes:

>In article <CDI59H.ELH@wang.com>, Dave Bushong <dbushong@wang.com> wrote:

>>ritterbus001@wsub.ctstateu.edu writes:

>>

>>(deleted)

>>

>>An end-fed half wave requires no such 'ground plane' since it is

>>[...]

>Could you elaborate on the tuning network for a 1/2 wave end-fed

>antenna? It sounds like a great construction project.

>73...Jim N2VNO

The J-pole is an end-fed halfwave, although with a different means of matching. It is good when you have an upper support (such as when you are in a hotel, connect it to the curtain rod). I haven't looked in an ARRL antenna book lately, but I bet that would be a good place to start.

Does anyone else have any source information?

Dave

--

Dave Bushong, Wang Laboratories, Inc. Amateur Radio Callsign KZ10
Project Leader, Recognition products kz1o@n0ary.#noca.ca.na
Internet: dbushong@wang.com ARRL VE // W5YI VE

Date: 25 Sep 1993 17:37:29 GMT
From: elroy.jpl.nasa.gov!sdd.hp.com!col.hp.com!news.dtc.hp.com!hpscit.sc.hp.com!
rkarlqu@ames.arpa
To: ham-ant@ucsd.edu

References <27q3lg\$t5i@news.bu.edu>, <1993Sep22.183313.13702@Csl.Stanford.EDU>,
<clark.272.2CA291B1@odie.ee.wits.ac.za>
Subject : Re: Coils in Cellular Antennas

>I have been seeing TV and billboard adds for cellular telephones that make
>much of the fact that there is short segment of about 5-7 helical turns in
>the middle of what is recognized as a cellular telephone antenna.
>
>>The antenna functions as a two element collinear array, and the coil serves
>>to phase the upper element in the array.
>

OK, a couple of dumb questions:

If this scheme is only worth 2 or 3 dB., why not just use a 5/8 wave vertical
to get the same gain? (Possible answer: the notorious ground plane dependency
of 5/8 wave antennas).

Also, why not just double the transmitter power to get the extra 3 dB. After
all, EIRP is what counts in cellular, not transmitter power (as in ham radio).
I'll bet lots of cellular owning yuppies would pay a premium for their phone
to get rid of those silly looking "pigtails" on their roofs.

Rick N6RK
rkarlqu@scd.hp.com

Date: (null)
From: (null)
Seems this thread came up almost exactly one year ago! Funny how time
flies! At that time, everyone and his brother told how terrible UHF
connectors are and that using them is a heinous crime unmatched since
the times of Attila.

Here's an article that was posted last year by N1AL, who did some actual measurements. Enjoy.

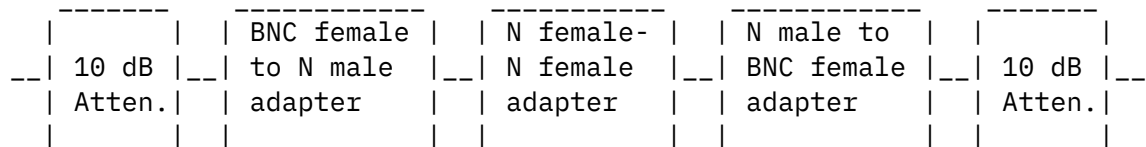
------(cut here)-----

From: alanb@hpnmdla.sr.hp.com (Alan Bloom)
Date: Fri, 18 Sep 1992 23:03:13 GMT
Subject: The Truth about UHF Connectors
Message-ID: <14570492@hpnmdla.sr.hp.com>
Organization: Hewlett-Packard, Santa Rosa, CA
Path: dxis!batman!cs.widener.edu!eff!sol.ctr.columbia.edu!spool.mu.edu!sdd.hp.com!sdd.hp.com!hplextra!hpl-opus!hpnmdla!alanb
Newsgroups: rec.radio.amateur.misc
Lines: 64

Ya gotta feel sorry for UHF connectors. Recent strings on this notes group lambasted them as worthless at VHF and above, and barely tolerable at HF. One poster called them "5 dB attenuators", and many agreed that there must be some sort of conspiracy among ham equipment manufacturers to inflict such garbage connectors on the amateur community.

Today I finally remembered to bring some UHF adapters from home so I could do some relative measurements of UHF versus type-N. As expected, the type-N showed lower insertion loss at high frequencies, but the UHF connectors were hardly "5 dB attenuators."

For the test I connected an HP8753 RF network analyzer through two short BNC cables into the following arrangement:



Then I repeated the measurement with the N adapters replaced with UHF. I normalized the measurements by replacing the 3 adapters with a BNC double-female. (That is, this was assumed to have 0 dB loss.)

Since two N or UHF adapters were used, I assume the loss per connector is half the total. The vertical scale was .1 dB/division, so I estimated the insertion loss to the nearest .01 dB or so:

----- Type N -----			----- UHF -----	
FREQ (MHz)	TOTAL LOSS	PER CONNECTOR	TOTAL LOSS	PER CONNECTOR
1.8	0 dB	0 dB	0 dB	0 dB
30	0	0	0	0
100	0	0	0	0

150	0	0	.02	.01
200	0	0	.03	.015
450	0	0	.18	.09
600	0	0	.26	.13
900	0	0	.66	.33
1000	.05	.025	.8	.4
1300	.1	.05	.86	.43
1600	.05	.025	.5	.25
2000	.05	.025	.02	.01

Insertion loss increases until about 1200 MHz, and then starts to decrease until it is almost zero for the UHF connector at 2 GHz! At this frequency, the connectors are about 1/4 wave long (1 inch, assuming .66 velocity factor), so I assume that the two adapters are providing a conjugate match to each other. This confirms my assumption that the insertion loss is due to reflections (impedance mismatch), not absorption (true power loss).

Bottom line: UHF connectors work fine through the VHF range, and are not too bad even on the 420 MHz band if you can stand about .1 dB mismatch loss per connector.

By the way, I did not do the full 2-port calibration on the HP8753, so there is a couple hundredth's dB ripple in the plots. I averaged this out by eye to come up with the numbers in the above chart.

AL N1AL

P.S. Sorry, I guess I violated the Usenet rule against posting objective data... :=)

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-----
| Bob Schreibmaier K2PH | UUCP:    uunet!dxis!k2ph      |
| (a.k.a. "The QRPer") | INTERNET: k2ph@dxis.monroe.pa.us |
| Kresgeville, PA      | ICBM:    40o55'N 75o30'W        |
-----
```

End of Ham-Ant Digest V93 #59
